# THE NORTH GREENLAND EXPEDITION OF 1891–92.

AN ADDRESS BY

CIVIL ENGINEER R. E. PEARY, U. S. N.

Ladies and Gentlemen, Members of the American Geographical Society: It is with mingled feelings of pleasure and pain that I come before you again to-night. Pleasure that the Society's tangible interest in, and endorsement of, my untried plans two years ago has been justified by the successful execution of those plans. Pain that one who sat beside me upon this platform upon the occasion of my last address is no longer with us. I refer to Gen. Cullum.

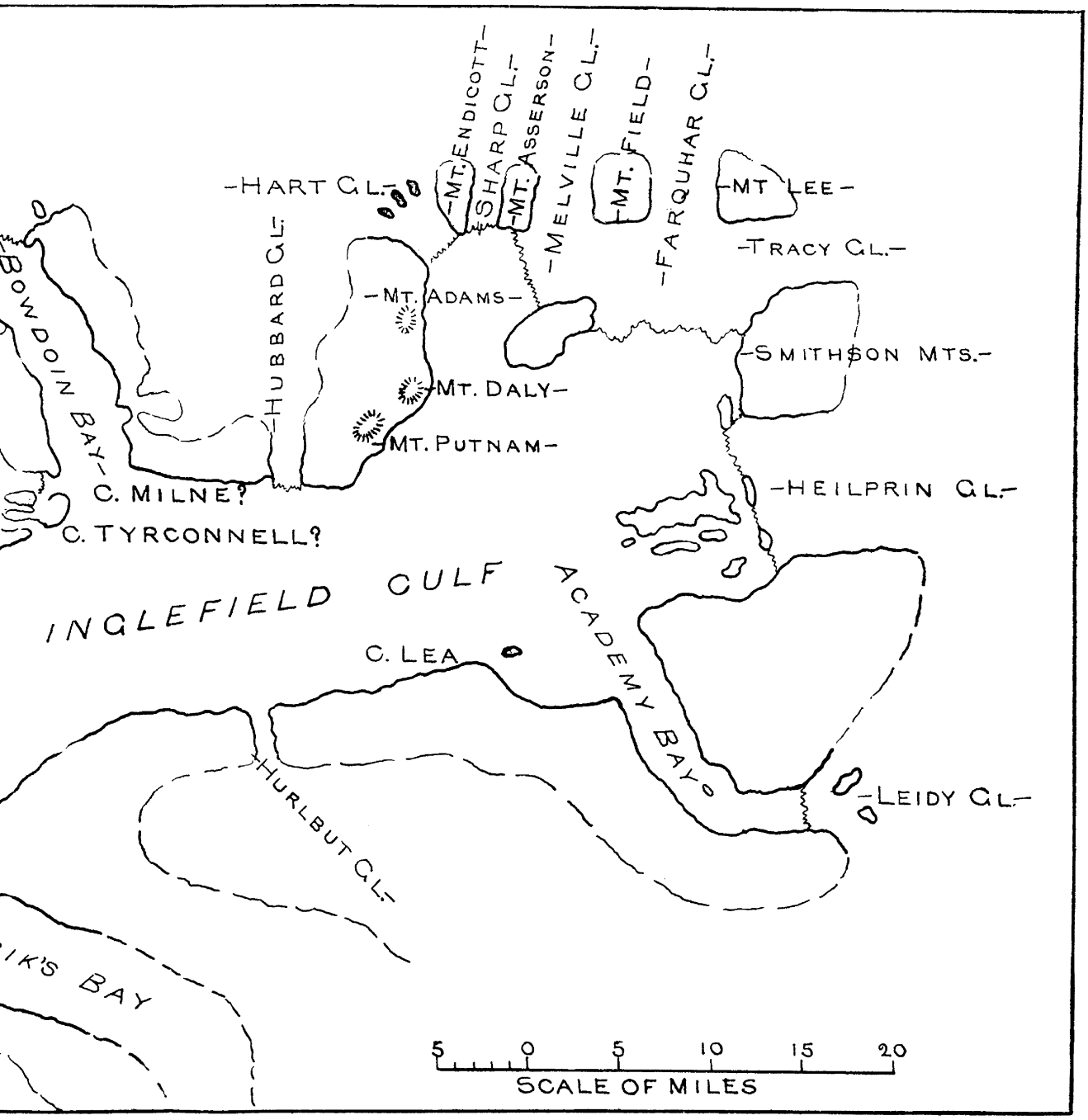
I remember so well when, just before sailing, I called upon him to say good-bye, he took my hand as I was leaving and said, "Peary, good-bye, I wish you all success, but when you come back, I shall be over in Greenwood." I laughed at him and told him he was good for more years than that, but his words were prophetic. When I returned, I found him over in Greenwood.

In order not to take up time with old material, I will refer those not present at my last talk, to the Society's BULLETIN of July, 1891, for the full prospectus of my expedition.

In a sentence, the principal object of the expedition was the determination of the northern limit of Green-


MAP OF WHALE SOUND AND IN

Showing additions made by the North Greenland Expedition of 1891–92. The shore li
the south side from the head of the Gulf to Olrik's Bay, is from the recent survey. All new na




SOUND AND INGLEFIELD GULF.

91–92. The shore line of the entire north side of Whale Sound and Inglefield Gulf, as well as survey. All new names are indicated by a dash before and after, thus—MT. DALY—.

land, and its fundamental feature was the utilization of the surface of the interior ice cap as the highway to the objective point. The one recognized in the project was the coextension of the land and ice cap northward, and the alternative proposed, in case the ice should be found to cease at a low latitude, was to follow its northern edge to the unknown east coast.

As a matter of fact the ice cap and the main land mass were both found to terminate at a lower latitude than I had expected, smaller detached land masses extending northward indefinitely ; and then I followed the northern limit of the ice to the east coast.

The little steam sealer Kite moved out of her Brooklyn dock at 5 P.M., June 6, 1891, and steamed up the East River amid the general salutes of the shipping. Stopping at Sydney, Cape Breton, to coal, thence passing through the straits of Belle Isle, where she was delayed several days by the ice, she arrived at Godhavn, Greenland, on the morning of the 27th. Here the expedition remained for two days and then steamed away for Upernavik, which was reached early in the morning of the 1st of July. The next morning we were at the Duck Islands, where a supply of ducks was laid in, and the following night we got under way for the passage of Melville Bay. Up to this time no ice had been met since leaving the straits. By midnight our further progress was arrested by the ice, and not until July 23d did the Kite get free from it off Conical Rock.

On the 11th of July I had the misfortune to have both bones of my right leg broken just above the ankle, by a blow from the iron tiller, while the Kite was ramming her way through the ice; and from that time until

July 27th, when I was carried ashore at McCormick Bay, I lay on my back in the cabin.

Early Saturday morning, July 25th, after a futile effort to force a passage into the ice which still stretched unbroken across Inglefield Gulf, the Kite swung around into McCormick Bay, on the north side of Omenak or Murchison Sound, and two boat parties were immediately sent out to reconnoitre the shores of the bay for a house site. This was soon selected, and the work of erecting the house commenced at once.

Fortunately, all the frames had been cut and fitted while we were fast in the ice, before the accident to my leg, and the remainder of the work was comparatively simple.

On the afternoon of the 27th I was transferred to my tent on shore, close to the house, where I could supervise the work. Two days later, on the 29th of July, all my supplies having been landed, I turned the Kite over to Prof. Heilprin, and early the next morning (Thursday) she steamed south.

During this time the crew of the Kite and Prof. Heilprin's party rendered my party much assistance in the work on the house.

Saturday the roof was completed, and I was carried in to escape a furious storm of wind and rain.

Tidal and meteorological observations were commenced at once.

On the 12th of August, my house being completed as to the exterior, I sent Gibson, Dr. Cook, Verhoeff and Astrup in the *Faith*, Gibson in command, with instructions to go to the great loomeries of Hakluyt Island and obtain a supply of birds for our winter use; then

to search the shores of Herbert and Northumberland for natives, and bring me back a hunter and his family. If no natives were found here, Gibson was to cross Whale Sound to the settlement of Nettiulume.

In six days the party returned, Gibson having successfully carried out all my instructions.

The construction of a winter stone wall about the house was then commenced, the work on this being varied by seal, deer and walrus hunts, and reconnoissances of the neighboring ice caps by Astrup on his ski.

Between September 7th and 30th two attempts were made, first by Astrup, Gibson and Verhoeff, then by Astrup and Gibson, to carry out my plan of establishing an autumn advance depot of supplies across Prudhoe Island at the southeast angle of the Humboldt Glacier.

In the last attempt the boys penetrated an estimated distance of thirty miles, when they were stopped by the condition of the snow.

During their absence, I was moving from place to place in my whale boat after deer, Matt and Ikwa, my native hunter, bagging fifteen. After the return of the boys from the inland ice, a hunting party was kept almost continuously in the field until the middle of November, when the score amounted to thirty-one.

By this time the long winter night was upon us, and we settled down in comfort and security, to pass lightly through it.

Constant occupation, first in the little fittings about home, then in the construction of ski and sledges, varied by daily exercise, the visits of the natives, and the pleasant breaks of Thanksgiving and the Christ-

mas holidays, congenial companionship and the best of food, carried us quickly through the sombre darkness.

The returning sun in the middle of February found us a company of athletes, in need of training to be sure, but in the best of condition and eager for some arduous effort. This event was also the signal for increased activity in the preparation of the equipment for the long journey.

Early in March hunting parties were again sent out, and added ten more deer to our stock.

On the 18th of April, accompanied by Mrs. Peary, Gibson and my native driver, I began a round of calls among my Eskimo neighbors, for the purpose of purchasing additional dogs and dog food, to be followed by a surveying tour of the unexplored recesses of Inglefield Gulf.

On the last day of April Dr. Cook, Gibson and Astrup, with five natives and eight dogs, started to the head of the bay to get the inland ice supplies up the bluffs.

May 3d I followed them with Matt and twelve dogs, leaving Verhoeff at Redcliffe to continue his meteorological and tidal observations, in which he had become intensely interested. Four days later Matt returned to Redcliffe.

A week of hardest work was consumed in transporting my supplies up hill and down hill, across the succession of great ice domes intervening between the shore and the edge of the true inland ice, fifteen miles distant.

On the 15th of May the actual start may be said to have been made.

REDCLIFFE HOUSE.

My course was northeast true, which, assuming the charts to be correct, should enable me to clear the heads of the Humboldt, Petermann and Sherard Osborn indentations.

Advancing on this course, much to my surprise, I found myself almost immediately over the divide, at an elevation of somewhat less than 5000 feet, and gradually descending toward the Humboldt Glacier Basin.

Hardly had I lost sight of the Whale Sound land before the distant peaks of the Rensselaer Harbour coast rose into view.

After a gradual descent to an elevation of about 3500 feet, the surface of the ice became nearly constant as to elevation across the Humboldt Glacier plateau.

On the 24th of May, at a distance of 130 miles from McCormick Bay, all my boys having volunteered to accompany me, I selected Astrup as my companion for the long journey, and Gibson and Cook returned to Redcliffe.

Two marches beyond this we began climbing again, and on the last day of June had passed out of the Humboldt depression, and from the plateau southeast of Petermann, at an elevation of 4200 feet, looked down upon the head of that Fjord and the great glacier discharging into it.

Still ascending, we reached the summit at an elevation of 5700 feet, June 5th, and then began descending into the St. George's and Sherard Osborn depressions. Unfortunately, the next two marches were made in cloudy weather, and I got too deeply into the depression and too near the centre of ice movement.

As a result, about ten days were lost in getting out again and back on to the crevasse-free level heights farther inland.

Again setting my course to the north and northeast, everything went smoothly for several days. We climbed gradually and easily over the highest divide we had yet encountered—something over 6000 feet in elevation—and were descending slightly towards the northeast, when, on the 26th of June, I was discouraged to see the land which had been occasionally visible to the northwest rise into view north and northeast.

Advancing a short distance farther, the entrance of a large Fjord came into view in the northwest, and soon after the land rose into view north and northeast, with the depression of the Fjord beyond it. I then deflected my course to the east, and soon found the land and the Fjord beyond it again confronting me; deflecting still more, this time to the southeast, I advanced until the first of July, when a broad break in the land beyond the Fjord was visible opening out to the northeast, and I immediately made for the land with the intention of reaching this opening. After reaching the inner edge of the land-ribbon where the inland ice came down against the slope of the mountains at an elevation of about 4000 feet, we were obliged to travel some twenty-five miles over the mountain crests and ridges before reaching a summit, which gave us an unobstructed outlook over the great bay stretching out to the northeastward. These twenty-five miles over a surface consisting of sharp rocks of all sizes were extremely trying to Astrup and myself. The fatigue of climbing with our heavy packs and hampered by the

dogs, which we were obliged to take with us, was greatly increased by the enervating effect of what was to us an almost tropical temperature, accustomed as we had been to the clear, cold, searching atmosphere of the inland ice. When, however, we reached at last the summit of the great bronzed cliff, some 3800 feet in height, guarding the head of the great bay, we forgot all our fatigue in the grandeur of the view before us. To our right across a great glacier rose other vertical bronze cliffs 4000 feet or more in sheer height, and ending in a wild promontory. Northward and northeastward stretched a bold bluff, red-brown line of shore, the nearest portion of it surmounted by an ice cap of limited extent, but the more distant portions free of all cresting ice cap and of snow. To our left lay the depression of the Fjord which had barred our passage, and still farther to the northward we could make out the entrance of a second Fjord, reaching apparently to the northwestward. At our feet beyond the great fan-shaped face of the glacier, which I estimated to be twenty miles in periphery, were scattered numerous icebergs, prisoned in the still unbroken surface of the bay ice. Beyond this the bay ice seemed perfectly smooth and unbroken, and stretched away uninterrupted to the distant white horizon of the northeastern Arctic Ocean. Far out in the centre of the bay I could make out a clouded appearance, undoubtedly due to the formation of water pools upon the surface of the ice, the first signs of approaching disintegration.

The bay itself I named, in honor of the day on which we first looked down upon it, Independence Bay. The great glacier at my right I called Academy Glacier,

and the giant cliff on which we stood, and upon which I afterward erected my cairn, I named Navy Cliff.

July 7th we were back at the edge of the inland ice, and on the 8th began our uneventful return journey.

During our traverse of this northern land I found flowers of numerous varieties blooming in abundance, conspicuous among them the ever present Arctic poppy. Snow-buntings, two or three sand pipers, a single gerfalcon and a pair of ravens were observed. Two bumblebees, several butterflies and innumerable flies were also noted. As for musk-oxen, their traces are to be found on every mountain and in every valley; without making any search whatever for them we saw about twenty, and all of these could have been obtained without the least difficulty.

Bearing more to the south into the interior, in order to avoid the obstacles near the coast, in four marches we were on the great central plateau, cloud-capped and deep with snow. Here, at an average elevation of about 8000 feet, we travelled for two weeks; then bearing to the westward, came down to the 5000 feet level east of the Humboldt Glacier, and thence parallel to the outward route to the head of McCormick Bay. Just before midnight of August 5th we met Prof. Heilprin and his party some ten miles from the edge of the ice, and early in the morning of Saturday the 6th we touched the shore of McCormick Bay.

A day or two after this, while the collections and material were being taken on board the Kite, occurred the single sad accident of the entire expedition. Verhoeff, who had gone on a geological trip, failed to return, and, fearing something might have happened to

him, an immediate search was instituted. During this search, prosecuted for seven days and nights by all the members of my party and Prof. Heilprin's, the Kite's crew, and nine Eskimo, the latter excited to the utmost by the promise of a rifle and a box of ammunition to the first who saw Verhoeff, the entire country between the place where Verhoeff was last seen and the Eskimo settlement which was his destination was carefully searched. The men fired guns at regular and frequent intervals, and shouted continuously. A knife and handkerchief lost by a party of hunters nearly a year previous were found, also minerals left by Verhoeff, and he was finally tracked to the edge of one of the large glaciers, where all further trace was lost, and after quartering the glacier in every direction we were forced to the painful conclusion that he had perished in one of the countless crevasses, and the search was therefore reluctantly abandoned.

The personnel of the expedition comprised in addition to Mrs. Peary and myself, Dr. F. A. Cook, Surgeon and Ethnologist; John M. Verhoeff, Mineralogist and Meteorologist; Langdon Gibson, Ornithologist; Eivind Astrup, Matthew Henson.

The elimination of the work of any one of these would have detracted very largely from the success of the expedition.

To Dr. Cook's care may be attributed the almost complete exemption of the party from even the mildest indispositions, and personally I owe much to his professional skill, and unruffled patience and coolness in an emergency. In addition to his work in his special ethnological field, in which he has obtained a large

mass of most valuable material concerning a practically unstudied tribe, he was always helpful and an indefatigable worker.

Verhoeff, besides contributing generously to the expense of the expedition, was devoted to his meteorological and tidal observations and made a complete and valuable series of both.

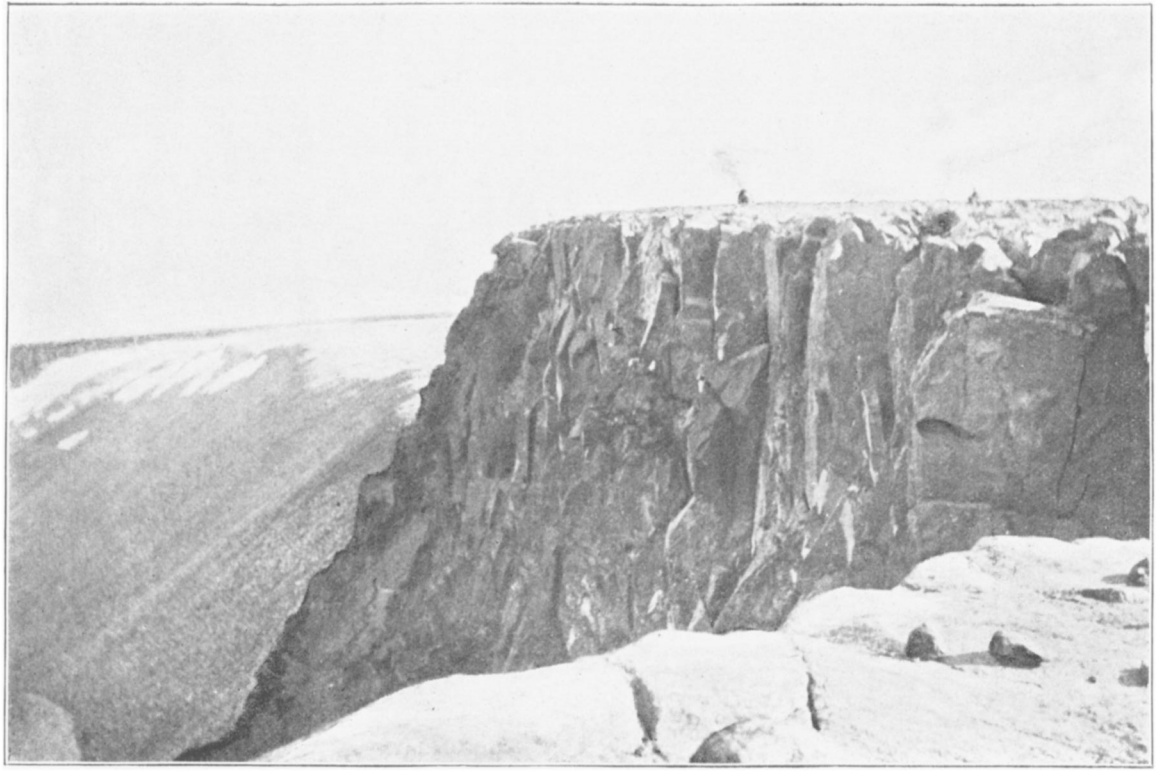
Gibson, a natural hunter, quick with rifle and gun, in addition to his ornithological work, contributed more largely than any other member of the party to our supply of game.

Astrup, a young Norwegian, a boy in years but a man in grit and endurance, was one among a thousand for the long and lonely journey during which he was my sole companion.

Henson, my faithful colored boy, a hard worker and apt at anything, being in turn cook, hunter, dog-driver, house-keeper and body guard, showed himself, in powers of endurance and ability to withstand cold, the equal of others in the party.

My acknowledgments of my obligations to the members of my party would be incomplete without reference to one who, though a member of the party, was in some sense not a member of the expedition, being on a somewhat different standing.

I refer to Mrs. Peary. Outside of the unspeakable comfort of her soothing presence in the time when at the threshold of a field of effort, in which pure brute physical fitness and strength are a *sine qua non*, I found myself a helpless cripple, I feel that I speak without prejudice when I say that to her womanly presence at all times and her valuable assistance and suggestions, especially in



NAVY CLIFF.

regard to our clothing outfit, the expedition owes much.

The experience of the expedition has proved conclusively to me the correctness of my theory as to the quality of the personnel of an Arctic expedition, namely, that it should be composed entirely of men of youth, perfect health and educated intelligence.

Such men, imbued with an interest in their work and the success of the expedition, able to lift themselves beyond the gloom and inactivity of the present, with plans for the work of the future, and possessing resources within themselves, are able to resist in a maximum degree the depressing and demoralizing effect of the long winter night, and in the field their ardor and *élan* more than balance their inexperience, or the toughened endurance of the working-man of a lower grade of intelligence.

Under the head of equipment I will touch upon but three important items possessing especial features of interest, and on which the comfort and health of the party and the successful execution of its work largely depended, viz.: house, travelling gear and clothing.

Our house, which was designed with a view to a minimum of weight and size with a maximum of comfort, was perhaps the most comfortable structure in which an Arctic expedition ever lived.

Floor timbers, posts and rafters were of one and one-quarter inch boards, ten inches wide, the former spaced one and one-half inch apart, the latter three inches.

The floor consisted of one and one-quarter inch yellow pine tongued and grooved.

The inside of the frames and rafters was covered with one-quarter inch thick trunk boards, thirty-six by forty-four inches, and when these had been nailed in place the joints were carefully pasted over with thick brown paper, making an air-tight inner shell. Inside of the trunk boards, and kept one inch away from them by light battens, was a lining of heavy red blankets. On the outside of the frames was first a continuous layer, from the ground to the ridge, of heavy tarred paper, then an outside boarding of one inch tongued and grooved stuff, then a second layer of tarred paper with edges battened down. Windows were all double.

Four feet away from the exterior of the house and extending entirely around it, a wall of stone and turf helped out with barrels was built, until its top was some four feet below the eaves of the house.

All of my provisions, such as flour, corn meal, tea, sugar, coffee, biscuit, etc., which do not come originally in tin, were specially packed for me in rectangular tins containing twenty-five pounds net each, and two of these tins were packed in a substantial wooden case. These cases being all of nearly the same size, I removed the covers and then utilized them like blocks of stone to raise the wall some two feet higher.

The open side of the cases being placed inward they served both as a protection and a store-house; their contents being readily accessible from the corridor between the wall and the house.

From the top of the wall to the house extended a canvas roof, and after the snow came it was banked carefully against the wall, over the corridor roof and on the flat portion of the roof. The inmates of Red-

cliffe then had between them and the fury of the winter storms first a thickness of heavy blanketing, an inch air-space, then an air-tight shell of card-board, a ten-inch air-space, a thickness of tarred paper, an inch of boards, another thickness of tarred paper, a four feet air-space, from one and one-half inch to three inches of stone and turf wall, and from one inch to five inches of snow.

After this description it is not difficult to believe that the winter allowance of forty pounds of soft coal per twenty-four hours was never exceeded, and that the actual consumption was often as low as nineteen pounds.

The interior dimensions of the house were twenty-one feet by twelve feet, with seven feet height. This space was divided into two apartments, one seven and one half feet by twelve feet, occupied by Mrs. Peary and myself, the other thirteen feet by twelve feet, occupied by the rest of the party.

The ventilation of the house was effected, and the moisture of the atmosphere carried away, by an eight by ten air-shaft in each room, extending clear through the roof and covered by a board perforated with five two and one-half-inch holes.

These holes were open all the time, and in low temperatures the condensation from the warm air escaping through them was like heavy smoke.

Three times during the winter the floor was scraped, scrubbed thoroughly with soap and hot water, and then gone over with a weak solution of corrosive sublimate.

The three sledges used on the long trip were the survivors of a fleet of ten, comprising seven different styles. They consisted simply of two long, broad wooden run-

ners curved at both ends, with standards supporting light but strong cross bars. The larger sledge was thirteen feet long and two feet wide, with runners four inches wide and standards six inches high ; this sledge had no particle of metal in its construction, being composed entirely of wood, horn, and raw-hide lashings. It weighed forty-eight pounds, and carried easily a load of 1000 pounds.

After a two hundred and fifty mile trip round Inglefield Gulf, it made the long journey to the north and return to within two hundred miles of McCormick Bay, when it was abandoned for a lighter sledge.

The second sledge was eleven feet long by two feet wide, with three and one-half inch runners and six inch standards. It weighed 35 pounds, and carried a load of over five hundred pounds. As a result of imperfect lashing, it broke down on the upward trip and was abandoned.

The third sledge made by Astrup, was ten feet long by sixteen inches wide, with three-inch runners and two-inch standards ; it weighed 13 pounds, and carried a load of 400 pounds. This sledge made the round trip of 1300 miles, though carrying a load for only about eight hundred miles.

The result of this extended practical experience with sledges has been to show me that my previous ideas as to the great superiority of the toboggan type of sledge for inland ice work (ideas gained during my reconnoissance in 1886, east of Disco Bay) were erroneous, and that the sledge with broad runners and standards is *the* sledge. Also, that the wear upon the runners is practically nil, and that shoes of steel or ivory are not

CAIRN ON NAVY CLIFF.

only useless, but actually increase the tractive resistance.

Of even greater importance to our successful progress during the inland ice journey than our sledges were the "ski," or Norwegian snow-skates.

Valuable as are the Indian snow-shoes for Arctic work, the "ski" far surpass them in speed, ease of locomotion and reduced chances of chafing or straining the feet.

On the upward journey I alternated between the snow-shoes and the "ski," but while descending the northern ice slope, I had the misfortune to break one of the "ski," and on the return trip was obliged to use the snow-shoes only. Astrup used "ski" entirely from start to finish.

As regards clothing, I stated before my departure that nothing but the impervious integument of animal skin would keep out the searching wind of the inland ice. I am now satisfied that the only material for the clothing of men travelling upon inland ice is fur, and that the man who dispenses with it adds to the weight he has to carry, and compels himself to endure serious drafts upon his vitality, to say nothing of deliberately choosing discomfort instead of comfort.

The great objection urged against fur clothing is that, allowing the evaporation from the body no opportunity to escape, the clothing beneath it is saturated while the wearer is at work and then, when he ceases, he becomes thoroughly chilled.

This trouble is, in my opinion, due entirely to inexperience and ignorance of how to use the fur clothing.

It was a part of my plan to obtain the material for my

fur clothing and sleeping bags in the Whale Sound region, and I was entirely successful in so doing. My boys shot the deer, the skins were stretched and dried in Redcliffe, I devised and cut the patterns for the suits and sleeping bags, and the native women sewed them.

As a result of my study of the Eskimo clothing and its use, I adopted it almost *literatim*, and my complete wardrobe consisted of a hooded deer-skin coat weighing five and one-fourth pounds, a hooded seal-skin coat weighing two and one-half pounds, a pair of dog-skin knee trousers weighing three pounds nine ounces, seal-skin boots with woollen socks and fur soles, weighing two pounds, and an undershirt; total, about thirteen pounds.

With various combinations of this outfit, I could keep perfectly warm and yet not get into a perspiration, in temperatures from +40° F. to −50° F., whether at rest, or walking or pulling upon a sledge.

The deer-skin coat, with the trousers, foot-gear and undershirt weighed eleven and one-fourth pounds, or about the same as an ordinary winter business suit, including shoes, underwear, etc., but not the overcoat. In this costume, with the fur inside and the draw strings at waist, wrists, knees and face pulled tight, I have seated myself upon the great ice cap 4000 feet above the sea with the thermometer at −38°, the wind blowing so I could scarcely stand against it, and with back to the wind have eaten my lunch leisurely and in comfort; then stretching myself at full length for a few moments, have listened to the fierce hiss of the driving snow past me with the same pleasurable sensation that, seated be-

side the glowing grate, we listen to the roar of the rain upon the roof.

When it is remembered that my deer-skin coat was of the covering devised by nature to protect her tenderest creature in that very region, I may not be accused of exaggeration.

Our sleeping bags, also of the winter coat of the deer with the fur inside, were, I think, the lightest and warmest ever used.

They were made after a design of my own, and each member of the party was measured for his bag as he was for his coat.

In my own bag, weighing ten and one-fourth pounds, I have slept comfortably out upon the open snow, with no shelter whatever and the thermometer at −41° F., wearing inside the bag only under-garments.

During the inland ice journey, throughout which the temperature was never but a degree or two below zero, our sleeping bags were found to be an encumbrance and were thrown away, our fur clothing being ample protection for us when asleep, even though I carried no tent.

While the variety of food was not as great as it has been on some other expeditions, I doubt if any party ever had more healthy or nutritious fare.

A carefully studied feature of my project was the entire dependence upon the game of the Whale Sound region for my meat supply; and though I took an abundance of tea, coffee, sugar, milk, flour, corn-meal and evaporated fruits and vegetables, my canned meats were only sufficient to carry us over the period of installation, with a small supply for short sledge journeys.

In this respect, as in others, my plans were fortunate of fulfilment, and we were always well supplied with venison.

With fresh meat and fresh bread every day we could smile defiance at scurvy.

The accident to myself on the upward voyage, and my consequent incapacity for work during the season of 1891, was a serious blow to me, destroying, as it did, my opportunities for geographical work in the neighborhood of Redcliffe House, and, what I regretted most keenly, rendering it impossible to make velocity measurements of the extremely interesting glaciers of that region. Fortunately, the accident did not affect the long sledge journey, which was the main object of the expedition.

The principal geographical results of the expedition may be briefly summarized as follows:

The delineation of the unknown shores of Inglefield Gulf, and the imperfectly known shores of Whale and Murchison Sounds. The variance of existing charts from the real configuration of this region is so great that I found it difficult to locate satisfactorily the names appearing upon the charts. I have, however, retained all these names, and I think that in future there will be no difficulty in distinguishing them.

The most commanding summit of the entire region, a snow-capped peak of striking peculiarities, situated upon the northwest shore of the gulf, with an elevation of not less than 5500 feet, and possibly 6000, I have named in honor of the distinguished President of the Society, Mt. Daly. Nearly all the glaciers of this gulf are of the first magnitude, and are the peers of the

MT. DALY.

great ice streams of Jakobshavn, Tossukatek, and Great Kariak, in Disco Bay and Omenak Fjord.

2. The determination of the insularity of Greenland, and the delineation of the northern extension of the great interior ice cap, the main land mass.

3. The determination of the existence of detached ice-free land masses of less extent, to the northward.

4. The determination of the rapid convergence of the Greenland shores above the seventy-eighth parallel.

5. The determination of the relief of an exceptionally large area of the inland ice.

6. The discovery of a large number of glaciers of the first magnitude.

In the field of ethnology the last expedition can claim to be the first that has obtained complete and accurate information of the peculiar and isolated tribe of Arctic Highlanders. Dr. Cook has made a complete census of the little community of Smith Sound Eskimo, showing the relationship and approximate age of every man, woman and child in the tribe. The total, according to this census, is 233. He has also made anthropometrical measurements of seventy-five individuals, and with his assistance I have taken a complete series of photographs of the same individuals, comprising portrait, and front, side and rear elevations in the nude of each subject.

The meteorological and tidal observations by Mr. Verhoeff are among the most complete and painstaking ever made in the Arctic regions. An independent set of four hourly tidal and weather observations, kept by each officer of the watch, will prove of value in connection with the above.

As regards geographical methods during the traverse of the inland ice, my daily reckoning was kept by the compass, and an odometer wheel attached to the rear of the sledge. The circumference of this wheel being a trifle less than six feet one inch, one thousand revolutions of it made one nautical mile, and the revolutions were registered by the ordinary odometer mechanism.

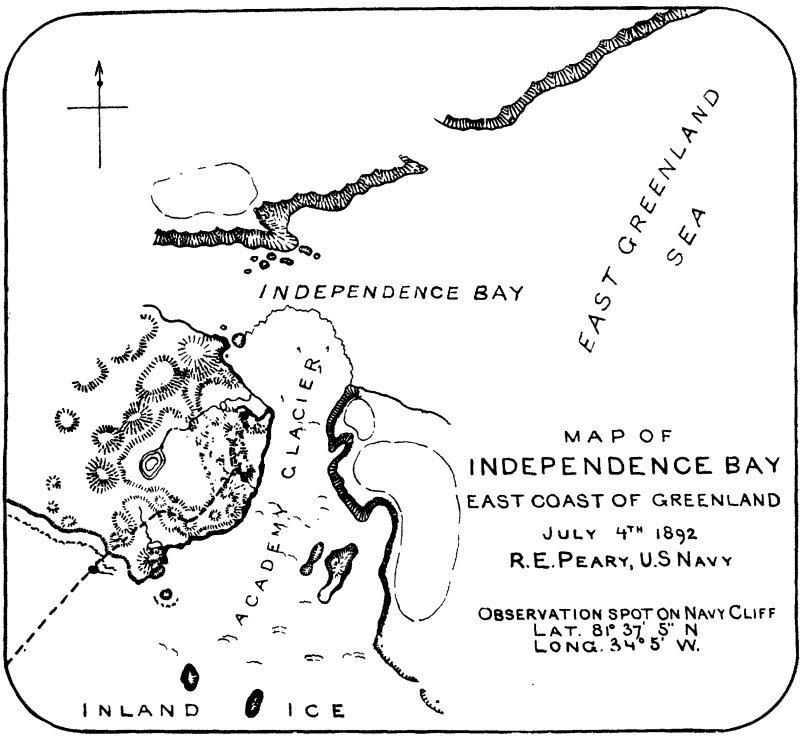
At four camps on the upward journey and three on the return, not including the observations at Navy Cliff overlooking Independence Bay, this daily reckoning was checked by a complete series of solar sights, taken with a small traveller's theodolite with a special vertical arc of large radius.

The time was obtained from two pocket chronometers and a high grade watch, all of which were carefully rated before my departure and after my return, and were compared with each other almost daily during the journey.

That these observations were not taken more frequently was due to the fact that, travelling as we did when the sun was north and sleeping when it was south, the taking of a set of observations meant for me either no sleep at all or, at best, but two or three hours of it. That even the field working of my sights was, however, not very far out of the way may be inferred from the fact that running on a compass course from my last observation camp, 150 miles northeast of McCormick Bay, and supposing myself to be ten miles to the eastward of my outward course, I found myself on reaching the head of McCormick Bay but five miles to the eastward; in other words, I was five miles out in my reckoning.

The freedom of the inland ice from all local attraction and the consequent reliability of the compass, if its constantly changing declination be carefully watched, is of great assistance to the traveller.

Elevations were determined by aneroids only, a




special boiling-point apparatus, which I had ordered for the purpose of checking the aneroid readings, having proved on trial to be perfectly worthless.

In conclusion permit me to say, while my recent expedition has been fortunate in most respects, and while the long sledge journey over the inland ice may perhaps lay

claim to be called unique in respect to the distance covered by two men without a cache from beginning to end, and in respect to the effectiveness with which those men were able to handle a large team of Eskimo dogs, it must be borne in mind that this was the first time that dogs had been used upon the inland ice, and that many of the methods and articles of equipment had to be devised especially for the novel conditions of the work. In fact, the art of travelling upon the inland ice is in its infancy, compared with travel over the sea ice along an Arctic shore line, and fruitful in results as has been the last expedition, it has been equally fruitful in practical experience and suggestions for future work which, with opportunity, may accomplish results far in advance of those already obtained.

Of these possible results I hope later to have the honor of speaking to you.